BOVILL WATER DEPARTMENT (PWS 2290005)
SOURCE WATER ASSESSMENT FINAL REPORT

January 13, 2003

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated source water assessment area and sensitivity factors associated with the well and aquifer characteristics.

This report, *Source Water Assessment for Bovill Water Department, Bovill, Idaho,* describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The Bovill Water Department drinking water system is composed of three manifolded wells which pump directly into two reservoirs. Well #1 was drilled in 1928, Well #2 has an unknown construction date, and Well #3 was drilled in 1980. The system serves approximately 275 people through 150 connections.

Final susceptibility scores are derived from equally weighing system construction scores, hydrologic sensitivity scores, and Potential Contaminant/Land Use scores. Therefore, a low rating in one or two categories coupled with a higher rating in other categories results in a final rating of low, moderate, or high susceptibility. With the potential contaminants associated with most urban and heavily agricultural areas, the best score a well can get is moderate. Potential Contaminants/Land Uses are divided into four categories, inorganic contaminants (IOCs, i.e. nitrates, arsenic), volatile organic contaminants (VOCs, i.e. petroleum products), synthetic organic contaminants (SOCs, i.e. pesticides), and microbial contaminants (i.e. bacteria). As different wells can be subject to various contamination settings, separate scores are given for each type of contaminant.

In terms of total susceptibility, Well #1 rated automatically high for IOCs, VOCs, SOCs, and microbials. System construction rated high and hydrologic sensitivity rated moderate for the well. Land use rated moderate for IOCs, VOCs, SOCs, and low for microbials. The automatically high ratings are due to City Hall existing within 50 feet of the wellhead. If not for the infringements upon the sanitary setback distance, the well would have rated moderate for all potential contaminant categories.

In terms of total susceptibility, Well #2 rated automatically high for IOCs, VOCs, SOCs, and microbials. System construction rated high and hydrologic sensitivity rated moderate for the well. Land use rated low for IOCs, VOCs, SOCs, and microbials. The automatically high ratings are due to a shed existing within 50 feet of the wellhead, and surface water which is not draining more than 50 feet from the well. If not for the infringements upon the sanitary setback distance, the well would have rated moderate for IOCs, SOCs, and microbials, and low for VOCs.

In terms of total susceptibility, Well #3 rated automatically high for IOCs, VOCs, SOCs, and microbials. System construction and hydrologic sensitivity rated moderate for the well. Land use rated low for IOCs, VOCs, SOCs, and microbials. The automatically high ratings are due to City Hall existing within 50 feet of the wellhead. If not for the infringements upon the sanitary setback distance, the well would have rated low for all potential contaminant categories.

In addition to the individual ratings, because the three wells are manifolded together and the SOC atrazine was detected (September 1993) in the tested water, collectively the wells rated automatically high for SOCs.

No VOCs have ever been detected in the wells, and the only SOC contaminants found were atrazine. Trace concentrations of IOCs have been detected, but significantly below maximum contamination levels (MCLs) as set by the Environmental Protection Agency (EPA). For instance, nitrate was detected many times between 1993 and 2002, but never reached more than 10% of its MCL of 10 mg/L. Total coliform has been detected four times in the distribution system between 1993 and 1995, but not since then.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

For the Bovill Water Department, drinking water protection activities should first focus on correcting any deficiencies outlined in the sanitary survey (an inspection conducted every five years with the purpose of determining the physical condition of a water system's components and its capacity). Actions should be taken to keep a 50-foot radius circle clear of all potential contaminants from around the wellhead. Any contaminant spills within the delineation should be carefully monitored and dealt with. As much of the designated protection areas are outside the direct jurisdiction of the Bovill Water Department, collaboration and partnerships with state and local agencies, and industry groups should be established and are critical to the success of drinking water protection. In addition, the well should maintain sanitary standards regarding wellhead protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. For assistance in developing protection strategies please contact the Lewiston Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR BOVILL WATER DEPARTMENT, BOVILL, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the rankings of this assessment mean.** Maps showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings used to develop the assessment is also included.

Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The local community, based on its own needs and limitations, should determine the decision as to the amount and types of information necessary to develop a drinking water protection program. Wellhead or drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The Bovill Water Department drinking water system is composed of three manifolded wells which pump directly into two reservoirs. Well #1 was drilled in 1928, Well #2 has an unknown construction date, and Well #3 was drilled in 1980. The system serves approximately 275 people through 150 connections.

No VOCs have ever been detected in the wells, and the only SOC contaminants found were atrazine. Trace concentrations of IOCs have been detected, but significantly below MCLs as set by the EPA. For instance, nitrate was detected many times between 1993 and 2002, but never reached more than 10% of its MCL of 10 mg/L. Total coliform has been detected four times in the distribution system between 1993 and 1995, but not since then.

Defining the Zones of Contribution – Delineation

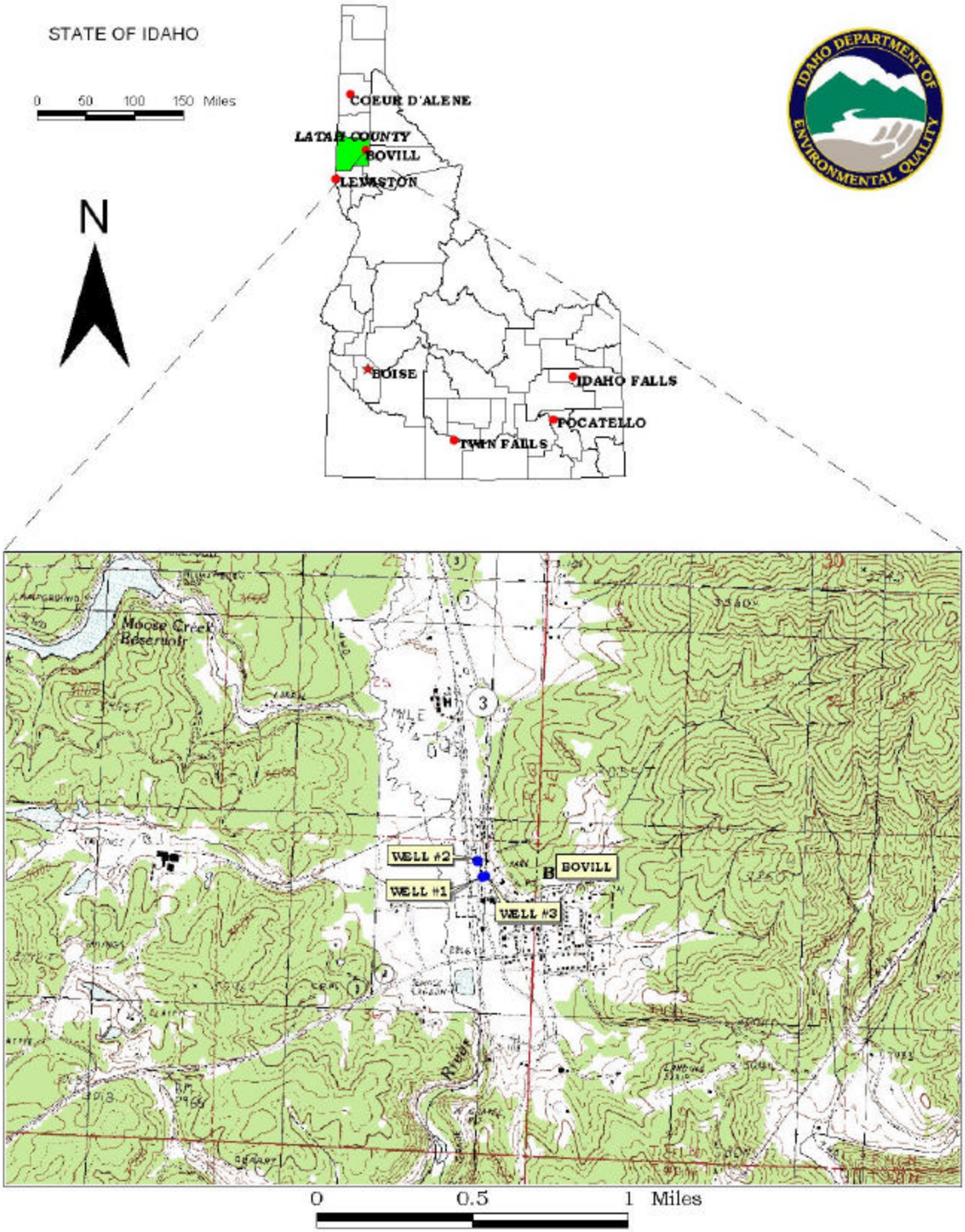
The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ contracted with the University of Idaho to perform the delineations using a refined computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water associated with the basalt aquifer of the Clearwater Plateau in the vicinity of the Bovill Water Department wells. The computer model used site specific data, assimilated by Ralston Hydrologic Services, Inc. from a variety of sources including operator input, local area well logs, and hydrogeologic reports (detailed below).

Hydrogeologic Setting

The City of Bovill is located in an area where metamorphic rocks are overlain by unconsolidated sediments. A thin veneer of basalt (Grand Ronde Member of the Columbia River Group) outcrops within a mile south and west of the city. The primary units of importance with respect to ground water development for the city are the metamorphic rocks and the overlying sediments.

Fracture zone aquifers within the metamorphic rocks are the water supply source for the existing City of Bovill wells. No specific metamorphic rock types or formations have been delineated in the immediate Bovill area. According to the draft geologic map, the metamorphic rocks in the Bovill area dip steeply (>70 degrees) to the west-southwest with a strike to the north-northwest. The steep dip of the rocks was confirmed by viewing the down-hole television tape of the uncased portion of City Well #1. This suggests that several wells located in a roughly north-south direction are more likely to penetrate the same sequence of rocks than several wells located in an east-west direction. This geologic setting complicates locating a new city well in the metamorphic rocks because drilling success can vary greatly with location in an east-west direction. Locating wells along strike (north-south direction) also is complicated because the exact strike of the rock units underlying the City of Bovill is not known.

FIGURE 1. Geographic Location of Bovill Water Deptartment



Unconsolidated sedimentary material overlying the metamorphic rocks provides a secondary potential aquifer for the City of Bovill. Sand and gravel units were penetrated in several area wells at depths as great as 150 feet. The basalt shown on the geologic map likely dammed the ancestral Potlatch River south-southwest of the city. Mostly fine-grained sediments were deposited in the low-energy environmental upstream of the basalt dam. These sediments form the flat area on which the city is located plus the area extending to the north from the city. Most wells in and near Bovill do not obtain any significant water supplies from the near-surface sediments. However, the presence of sand layers (possibly indicating pre-basalt depositional conditions) indicates that ground water development from this system is possible.

The delineated source water assessment area for the wells of Bovill Water Department can best be described as oval shaped corridors that extend approximately 5500 feet in a north by northeasterly direction and are between 2000 feet and 3500 feet at their widest points (Figure 2, 3, 4). The actual data used by Ralston Hydrologic Services, Inc. in determining the source water assessment delineation areas is available from DEQ upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of groundwater contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

Land use within the immediate area and the surrounding area of the Bovill Water Department wells contains some urban activity, however most of the delineation exists within undeveloped range land or woodland.

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, including educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted in March and April 2002. The first phase involved identifying and documenting potential contaminant sources within the Bovill Water Department source water assessment areas (Figure 2, 3, 4, and Table 1, 2, 3) through the use of computer databases and Geographic Information System (GIS) maps developed by DEQ. The second, or enhanced, phase of the contaminant inventory involved contacting the operator to identify and add any additional potential sources in the area.

The delineated source water assessment areas of the Bovill Water Department wells contain an underground storage tank (UST), and a superfund amendment and reauthorization act (SARA) site (Table 1 and Figure 2). In addition, Highway 3, the Potlatch River, and Burlington Northern Railroad cross at least one of the delineations. These sources can contribute leachable contaminants to the aquifer in the event of an accidental spill, release, or flood.

Table 1. Bovill Water Department, Well #1, Potential Contaminant/Land Use Inventory.

Site	Description of Source[1]	TOT[2] Zone	Source of Information[3]	Potential Contaminants[4]
1, 2	UST site, closed; SARA site, petroleum bulk station	0-3 YR	Database Search	VOC, SOC
	City Hall	1A	GWUDI Field Survey	IOC, VOC, SOC, Microbial
	Potlatch River	0-3 YR	GIS Map	IOC, VOC, SOC, Microbial
	Burlington Northern Railroad	0-3 YR	GIS Map	IOC, VOC, SOC, Microbial
	Highway 3	0-6 YR	GIS Map	IOC, VOC, SOC, Microbial

[1] UST =Underground Storage Tank, SARA = Superfund Amendments and Reauthorization Act
[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead; 1A = within 50 foot sanitary setback of well
[3] GWUDI = Ground Water Under Direct Influence
[4] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Table 2. Bovill Water Department, Well #2, Potential Contaminant/Land Use Inventory.

Site	Description of Source[1]	TOT[2] Zone	Source of Information[3]	Potential Contaminants[4]
	Burlington Northern Railroad	0-3 YR	GIS Map	IOC, VOC, SOC, Microbial
	Shed	1A	GWUDI Field Survey	IOC, VOC, SOC, Microbial
	Highway 3	0-3 YR	GIS Map	IOC, VOC, SOC, Microbial

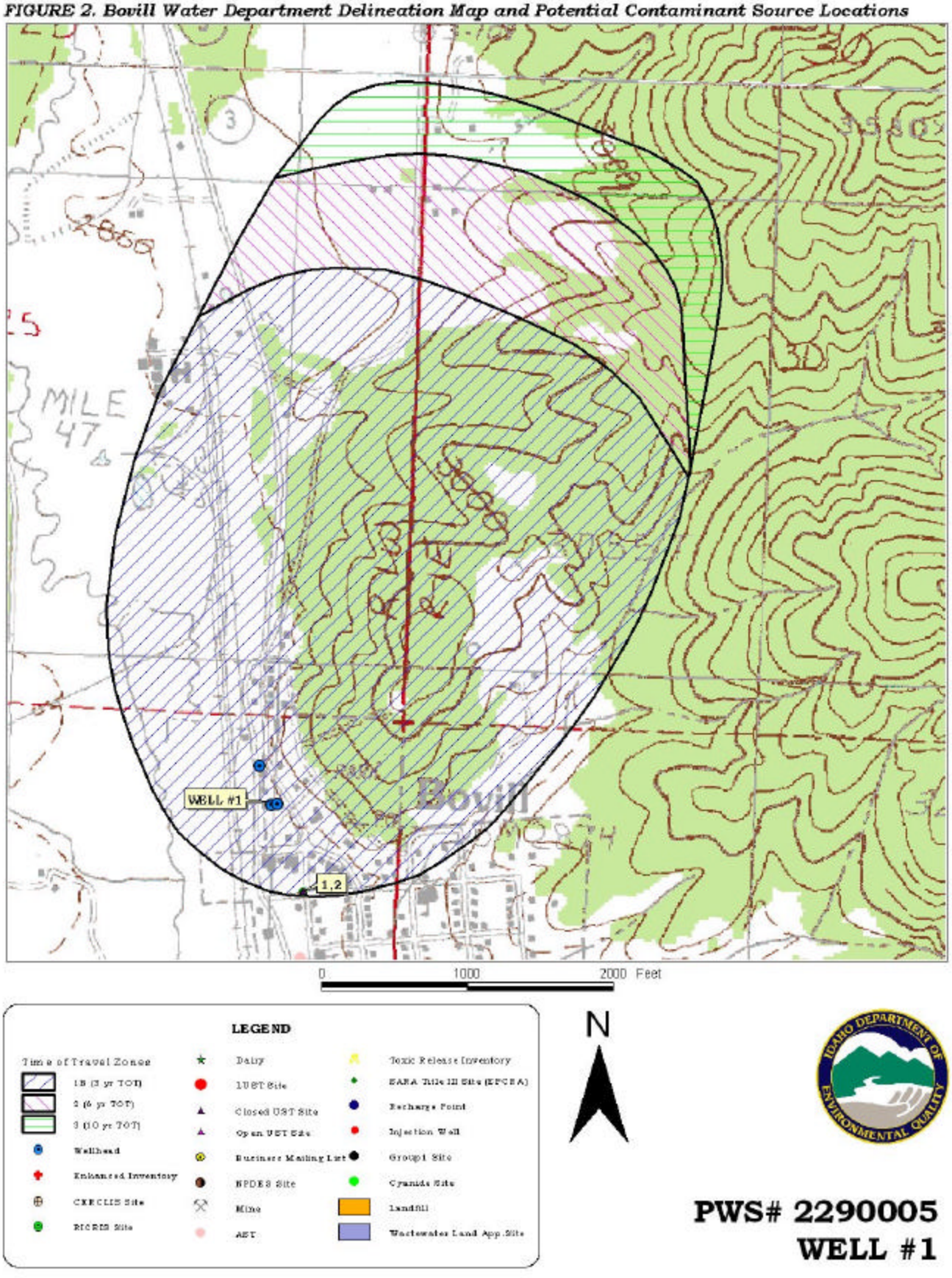
[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead; 1A = within 50 foot sanitary setback of well
[3] GWUDI = Ground Water Under Direct Influence
[4] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Table 3. Bovill Water Department, Well #3, Potential Contaminant/Land Use Inventory.

Site	Description of Source[1]	TOT[2] Zone	Source of Information[3]	Potential Contaminants[4]
	Highway 3	0-6 YR	GIS Map	IOC, VOC, SOC, Microbial
	City Hall	1A	GWUDI Field Survey	IOC, VOC, SOC, Microbial

[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead; 1A = within 50 foot sanitary setback of well
[3] GWUDI = Ground Water Under Direct Influence
[4] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

FIGURE 2. Bovill Water Department Delineation Map and Potential Contaminant Source Locations



PWS# 2290005
WELL #1

FIGURE 3. Bovill Water Department Delineation Map and Potential Contaminant Source Locations

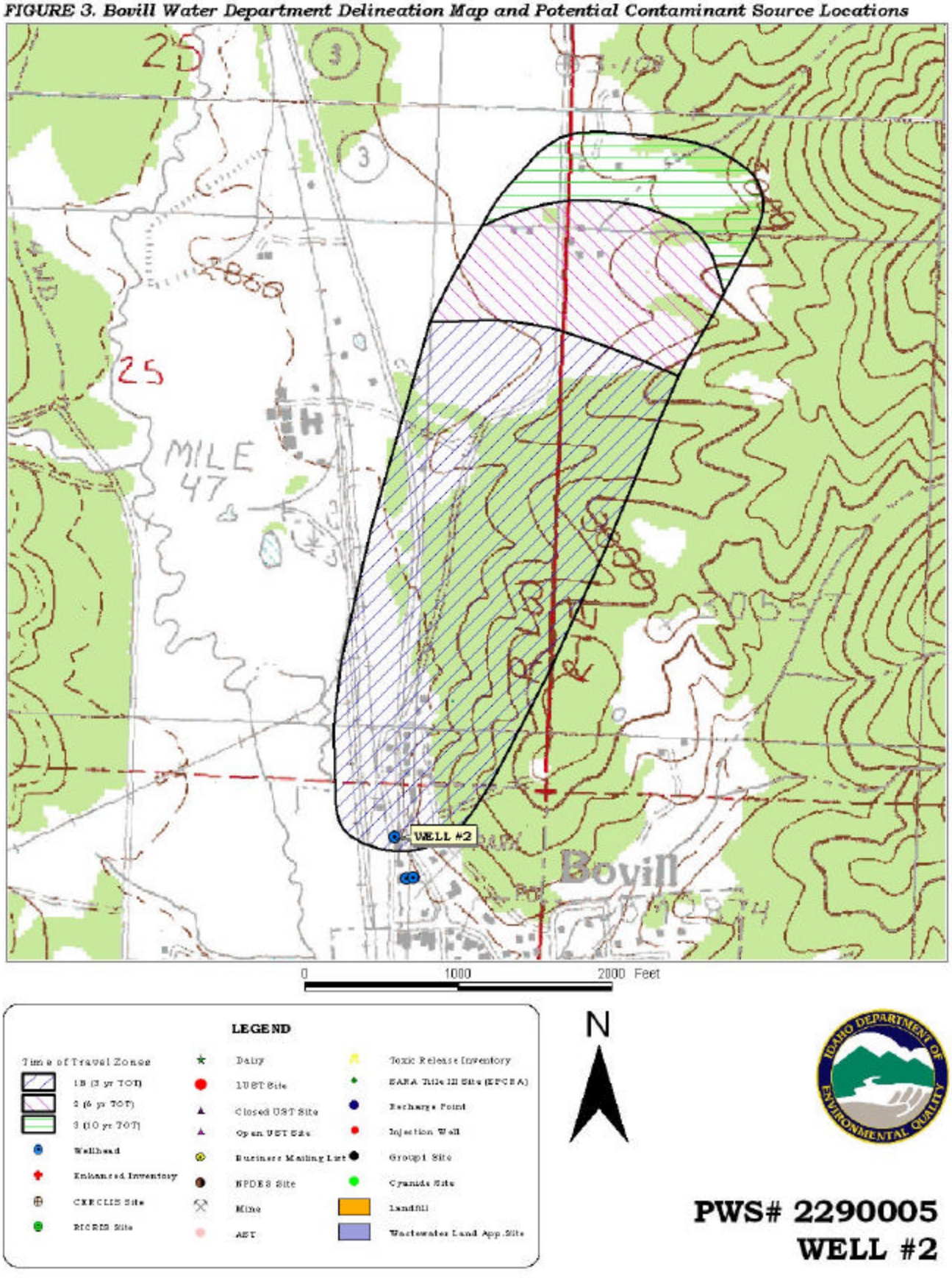
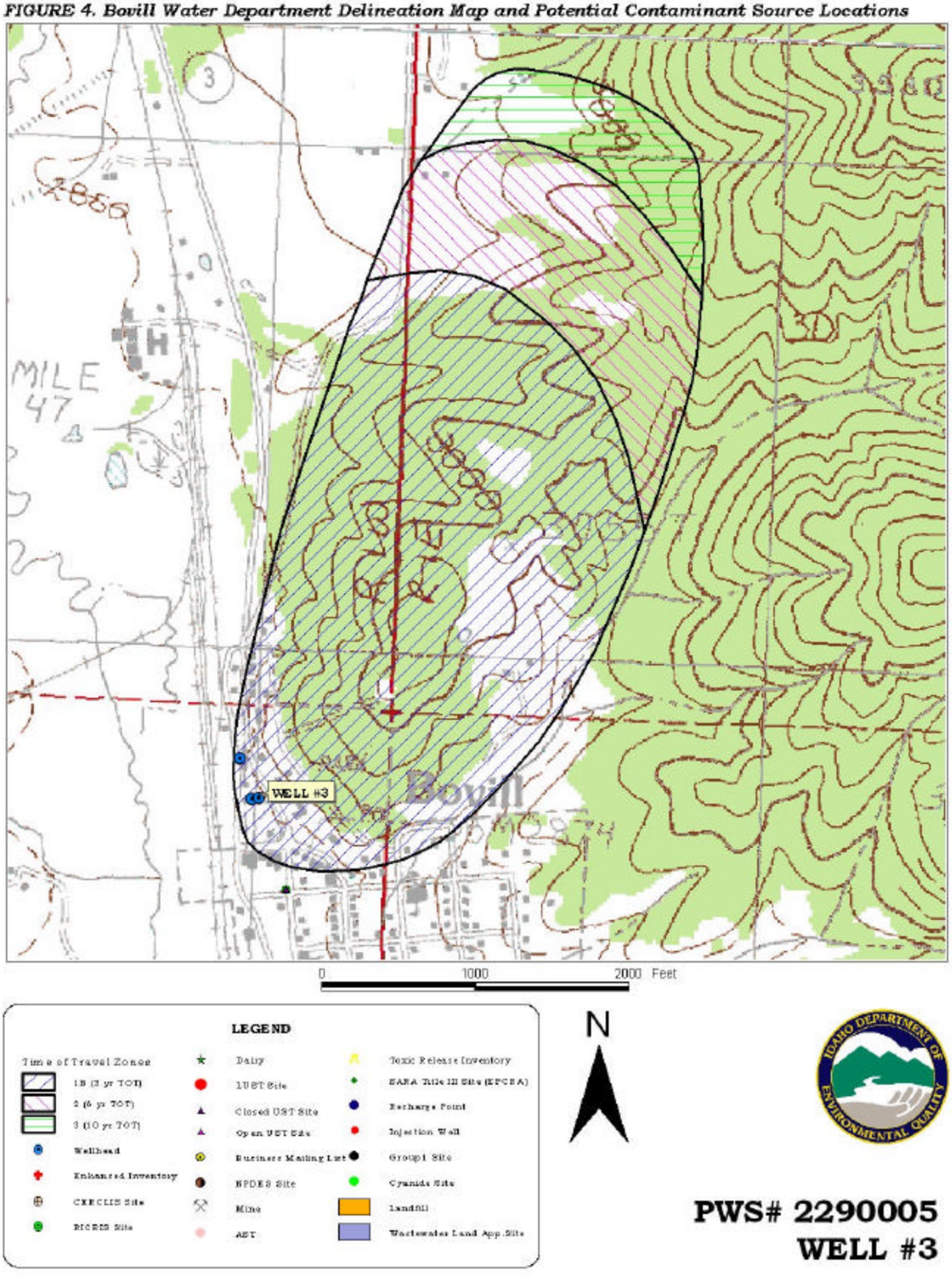


FIGURE 4. Bovill Water Department Delineation Map and Potential Contaminant Source Locations



Section 3. Susceptibility Analyses

Each well's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Attachment A contains the susceptibility analysis worksheets for the system. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone (aquitard) above the producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination.

Hydrologic sensitivity is moderate for all three wells. Each of the wells exist in areas where the soil is considered to be poorly- to moderately-drained by the National Resource Conservation Service (NRCS), positively affecting the rating. However, the vadose zone composition and presence of aquitards in Well #1 and Well #2 are unknown. Well #3 does not contain an aquitard and it's vadose zone is composed predominantly of overburden. In addition, none of the wells' highest production comes from more than 300 feet below the water table.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in sanitary surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced. A sanitary survey was conducted in 2000 for the system.

Well #1 and Well #2 rated high, and Well #3 rated moderate for system construction. All three wells are located outside the 100 year floodplain, minimizing the possibility of being flooded. According to the 2001 Drinking Water Supply Report, each of the active wellhouses need to be cleaned. No well logs were available for Well #1 and Well #2 during this analysis, so it is unknown if their casings and annular seals extend into low permeability units, or if their highest production comes from more than 100 feet below static water depths. A well log was available for Well #3. It indicated the casing and annular seal extend into low permeability units, and the highest production of water came from more than 100 feet below static water levels. The 1989 Drinking Water Supply Report noted that Well #1 and Well #2's casings do not extend the required 12 inches above the surface seal, and Well #3 is missing a vent.

Though the wells may have been in compliance with standards when they were completed, current PWS well construction standards are more stringent. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. These standards include provisions for well screens, pumping tests, and casing thicknesses to name a few. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. It is unknown if Well #1 and Well #2's casing thicknesses meet the current standard, and Well #3's casing is too thin. An 8-inch casing requires 0.322 inch thickness. As such, the wells were assessed an additional point in the system construction rating.

Potential Contaminant Source and Land Use

Well #1 rated moderate for IOCs (i.e. nitrates, arsenic), VOCs (i.e. petroleum products), SOCs (i.e. pesticides), and low for microbials. Well #2 and Well #3 rated low for all four contaminant categories. The number and location of potential contaminant sources within the delineation contributed to the land use scores.

Final Susceptibility Ranking

An IOC detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. In this case an automatically high susceptibility to SOCs was given to all three wells due to a 1993 detection of atrazine in the water downstream of the manifold. Additionally, all three wells received automatically high ratings due to infringements upon the 50 foot sanitary setback distance. Each well had buildings or a shed within 50 feet, and Well #2 had a surface water drainage which did not discharge more than 50 feet from the wellhead. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0 to 3-year time of travel zone (Zone 1B) and agricultural land contribute greatly to the overall ranking.

Table 4. Summary of Bovill Water Department Susceptibility Evaluation

Well	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well #1	M	M	M	M	L	H	H*	H^*	H*	H*
Well #2	M	L	L	L	L	H	H*	H^*'	H*	H*
Well #3	M	L	L	L	L	M	H*	H^*	H*	H*

[1]H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical
H* = Automatic high susceptibility due to infringements upon sanitary setback distance
H' = Automatic high susceptibility due to surface drainage not discharging more than 50 feet from Well #2
H^= Automatic high susceptibility due to detection of atrazine (1993) at the wells' manifold

Susceptibility Summary

The Bovill Water Department drinking water system is composed of three manifolded wells which pump directly into two reservoirs. Well #1 was drilled in 1928, Well #2 has an unknown construction date, and Well #3 was drilled in 1980. The system serves approximately 275 people through 150 connections.

In terms of total susceptibility, Well #1 rated automatically high for IOCs, VOCs, SOCs, and microbials. System construction rated high and hydrologic sensitivity rated moderate for the well. Land use rated moderate for IOCs, VOCs, SOCs, and low for microbials. The automatically high ratings are due to City Hall existing within 50 feet of the wellhead. If not for the infringements upon the sanitary setback distance, the well would have rated moderate for all potential contaminant categories.

In terms of total susceptibility, Well #2 rated automatically high for IOCs, VOCs, SOCs, and microbials. System construction rated high and hydrologic sensitivity rated moderate for the well. Land use rated low for IOCs, VOCs, SOCs, and microbials. The automatically high ratings are due to a shed existing within 50 feet of the wellhead, and surface water which is not draining more than 50 feet from the well. If not for the infringements upon the sanitary setback distance, the well would have rated moderate for IOCs, SOCs, and microbials, and low for VOCs.

In terms of total susceptibility, Well #3 rated automatically high for IOCs, VOCs, SOCs, and microbials. System construction and hydrologic sensitivity rated moderate for the well. Land use rated low for IOCs, VOCs, SOCs, and microbials. The automatically high ratings are due to City Hall existing within 50 feet of the wellhead. If not for the infringements upon the sanitary setback distance, the well would have rated low for all potential contaminant categories.

In addition to the individual ratings, because the three wells are manifolded together and the SOC atrazine was detected (September 1993) in the tested water, collectively the wells rated automatically high for SOCs.

Section 4. Options for Drinking Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For the Bovill Water Department, drinking water protection activities should first focus on correcting any deficiencies outlined in the sanitary survey. No chemicals should be stored or applied within the 50-foot radius of the wellhead. As much of the designated protection areas are outside the direct jurisdiction of the Bovill Water Department, collaboration and partnerships with state and local agencies, and industry groups should be established and are critical to the success of drinking water protection. In addition, the well should maintain sanitary standards regarding wellhead protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineation encompasses urban and commercial land uses. Public education topics could include proper lawn and garden care practices, hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA.

A system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Lewiston Regional Office of the DEQ or the Idaho Rural Water Association.

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Lewiston Regional DEQ Office (208) 799-4370

State DEQ Office (208) 373-0502

Website: http://www.deq.state.id.us

Water suppliers serving fewer than 10,000 persons may contact Melinda Harper, mlharper@idahoruralwater.com, Idaho Rural Water Association, at 208-343-7001 for assistance with drinking water protection (formerly wellhead protection) strategies.

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund≅ is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5 mg/L.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 1997. "Recommended Standards for Water Works."

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Idaho Department of Water Resources, 1993. Administrative Rules of the Idaho Water Resource Board: Well Construction Standards Rules. IDAPA 37.03.09.

Idaho Division of Environmental Quality. 1989. Drinking Water Supply Report for City of Bovill.

Idaho Department of Environmental Quality. 2001. Drinking Water Supply Report for City of Bovill.

Ralston Hydrologic Services, Inc. 2001. Ground Water and Well Analysis for the City of Bovill, Idaho.

Attachment A

Bovill Water Department

Susceptibility Analysis Worksheets

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

Ground Water Susceptibility Report Public Water System Name : BOVILL WATER DEPT Well# : WELL #1 CITY H

Public Water System Number 2290005 10/03/2002 4:15:38 PM

1. System Construction		SCORE
Drill Date	01/01/1928	
Driller Log Available	NO	
Sanitary Survey (if yes, indicate date of last survey)	YES	1989
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	NO	1
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0
Total System Construction Score		5

2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	YES	0
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
Total Hydrologic Score		4

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	RANGELAND, WOODLAND, BASALT	0	0	0	0
Farm chemical use high	YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	YES	YES	YES	YES
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	0	2	0
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	3	4	4	3
(Score = # Sources X 2) 8 Points Maximum		6	8	8	6
Sources of Class II or III leacheable contaminants or	YES	2	3	3	
4 Points Maximum		2	3	3	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		8	11	11	6
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		3	3	3	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		0	0	0	0
Cumulative Potential Contaminant / Land Use Score		13	14	16	6
4. Final Susceptibility Source Score		12	12	12	11
5. Final Well Ranking		High	High	High	High

Ground Water Susceptibility Report Public Water System Name : BOVILL WATER DEPT Well# : WELL #2 N OF CH

Public Water System Number 2290005 10/03/2002 4:05:00 PM

1. System Construction		SCORE
Drill Date	unknown	
Driller Log Available	NO	
Sanitary Survey (if yes, indicate date of last survey)	YES	1989
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	NO	1
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0
Total System Construction Score		5

2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	YES	0
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
Total Hydrologic Score		4

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	RANGELAND, WOODLAND, BASALT	0	0	0	0
Farm chemical use high	YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	YES	YES	YES	YES
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	0	2	0
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	2	2	2	2
(Score = # Sources X 2) 8 Points Maximum		4	4	4	4
Sources of Class II or III leacheable contaminants or	YES	2	2	2	
4 Points Maximum		2	2	2	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		6	6	6	4
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Land Use Zone II		0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		0	0	0	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		0	0	0	0
Cumulative Potential Contaminant / Land Use Score		8	6	8	4
4. Final Susceptibility Source Score		11	10	11	11
5. Final Well Ranking		High	High	High	High

Ground Water Susceptibility Report Public Water System Name : BOVILL WATER DEPT Well# : WELL #3 E OF CH
Public Water System Number 2290005 10/03/2002 4:40:09 PM

1. System Construction		SCORE				
Drill Date	07/23/1980					
Driller Log Available	YES					
Sanitary Survey (if yes, indicate date of last survey)	YES	1989				
Well meets IDWR construction standards	NO	1				
Wellhead and surface seal maintained	NO	1				
Casing and annular seal extend to low permeability unit	YES	0				
Highest production 100 feet below static water level	NO	1				
Well located outside the 100 year flood plain	YES	0				
Total System Construction Score		3				
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained	YES	0				
Vadose zone composed of gravel, fractured rock or unknown	YES	1				
Depth to first water > 300 feet	NO	1				
Aquitard present with > 50 feet cumulative thickness	NO	2				
Total Hydrologic Score		4				
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score	
Land Use Zone 1A	RANGELAND, WOODLAND, BASALT	0	0	0	0	
Farm chemical use high	YES	2	0	2		
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	YES	YES	YES	YES	
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	0	2	0	
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)	YES	1	1	1	1	
(Score = # Sources X 2) 8 Points Maximum		2	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1		
4 Points Maximum		1	1	1		
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0	
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone 1B		3	3	3	2	
Potential Contaminant / Land Use - ZONE II						
Contaminant Sources Present	NO	0	0	0		
Sources of Class II or III leacheable contaminants or	NO	0	0	0		
Land Use Zone II	Less than 25% Agricultural Land	0	0	0		
Potential Contaminant Source / Land Use Score - Zone II		0	0	0	0	
Potential Contaminant / Land Use - ZONE III						
Contaminant Source Present	NO	0	0	0		
Sources of Class II or III leacheable contaminants or	NO	0	0	0		
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0		
Total Potential Contaminant Source / Land Use Score - Zone III		0	0	0	0	
Cumulative Potential Contaminant / Land Use Score		5	3	5	2	
4. Final Susceptibility Source Score		8	8	8	8	
5. Final Well Ranking		High	High	High	High	